

The *young* with brown cross bands: the first is horseshoe-shaped, and encircles the occiput, each branch advancing to the eye; there are two irregular brown spots within its concavity: the second band occupies the posterior two-thirds of the neck: the third and fourth across the middle of the trunk: the fifth across the sacral region. Tail with five brown rings. These bands and rings are broader than the interspaces of the ground-colour, which is brownish yellow.

In the *adult* only the brown edges of these bands remain; so that there is one pair of brown cross bars on the neck, and three pairs on the trunk, the space between the bars being of the ground-colour. The horseshoe-shaped band on the occiput remains single; but the markings on the head are more defined than in the young one, viz. a pair of brown rings on the crown of the head, one cross band between the eyes, and two on the snout; a longitudinal streak runs from the eye to the nostril. Lower parts white; a group of indistinct brown dots on the elbows and knees.

I am indebted to R. T. Riddell, Esq., for two specimens of this species: one is adult, $5\frac{1}{2}$ inches long, the length of the tail being $2\frac{1}{2}$ inches; the other, young example is 3 inches long, tail $1\frac{1}{4}$ inch. They were collected at Hydrabad, Sindh, where the species is unjustly reputed to be venomous.

XLVIII.—*On some peculiar Structures in the Seminal Fluid of Ianthina.* By FRITZ MÜLLER of Desterro*.

It is but rarely that pelagic animals find their way into the arm of the sea which separates the island of Santa Catharina from the mainland of South America. Amongst these visitors, which are sometimes absent for several years together, are two species of *Ianthina*, which usually make their appearance as attendants on swarms of *Verella*. One of them with a more acute spire (*I. exigua*, Lam.), of which only a few females have once been seen, bears its eggs upon the frothy appendage of the foot: the other, which has been repeatedly found, has a flatter spire (*I. pallida*, Harv.), and is viviparous; in this I ascertained that the frothy appendage occurs in precisely the same manner in both sexes.

In the seminal fluid of the latter species there are some very peculiar structures, to which I would call the attention of visitors to the Mediterranean and others who may have the opportunity of examining this remarkable Mollusk. It is very probable that such an opportunity may not occur to me again for years; and

* Translated by W. S. Dallas, F.L.S., from Wiegmann's 'Archiv,' 1863, p. 179.

this may be my excuse for communicating my observations upon these structures in their present imperfect state.

Even with the naked eye we may observe in the seminal fluid of *Ianthina* numerous white vermiform structures, which swim about briskly in it*. Their length is about 0.5 millim. (exclusive of the swimming-apparatus to be hereafter described). The lens enables us to distinguish, in the first place, two sharply separated divisions, which may be indicated, for the sake of brevity, as the head and tail. The head occupies about one-fourth of the total length; it is sometimes of a pretty regular conical form, sometimes furnished at its posterior thicker portion with irregular processes, and sometimes projects anteriorly in a double instead of a single point. It contains numerous granules of various sizes, with dark outlines, which render it rather opaque; no distinct membrane could be perceived surrounding it. The tail, about three times as long as the head, is anteriorly much narrower than the hinder margin of the head, but becomes gradually enlarged posteriorly, and terminates in a rounded end; it is almost completely opaque, and is densely clothed with delicate hairs about 0.03 millim. in length. These hairs are seen to move quickly, but do not strike regularly in the same direction in the manner of cilia; on the contrary, they wave and mingle together irregularly, so that we cannot regard them as the cause of the rapid movements by which the structures pass through the water in large curves. In this movement the head and tail appear to be dragged along like a heavy mass by some force lying beyond them; and this is, in fact, the case. At a distance of nearly twice the length of the head from its apex it is preceded by a conical point, with delicate but clearly marked outlines, from which a perfectly transparent membrane waves down to about the middle of the head, like a fluttering veil. Sometimes I could detect an extremely delicate longitudinal striation in this membrane. Posteriorly its outlines were evanescent, so that I could scarcely ever trace it to its hinder margin: on one occasion only, in a young individual, I distinctly saw the hinder margin, at which the membrane appeared to separate into delicate fibres. Sometimes also a slender and not sharply defined cord could be traced from the anterior extremity of the head nearly to the conical point. Whether this undulating membrane forms a conical envelope connected with the head by a central free peduncle, or whether it spreads out flat and is immediately attached to the head, I cannot decide; for, just as I was turning my attention to this question, the black clouds of a rising storm robbed me of the light so indispensable

* Probably not throughout the year: my observations were made in October, which would correspond with April in the Mediterranean.

for carrying on such an investigation as this; and when I was able to resume it, I found that my whole stock of material had become useless in consequence of the commencement of decomposition.

In the vicinity of the conical point several little lobes, resembling narrow cilia, separate from the membrane. While the structure is swimming, these little lobes oscillate rapidly and strongly, and the whole membrane is in lively undulating movement. When towed along by this singular swimming-apparatus, the tail always appeared to me to be perfectly quiet; the whole structure, from the conical apex of the undulating membrane to the rounded extremity of the tail, then forms a slightly curved bow, and the course through which it passes follows a similar curve. When the membrane, and with it the head, are quiescent, the tail is seen slowly bending and twisting about, although without producing any perceptible change of place.

Deceived by such manifold movements, I was led, in 1860, to regard these structures as parasitic animals, in which, however, I vainly endeavoured to discover traces of a mouth, intestine, &c. But when I was recently (1862) again able to examine a male *Ianthina*, I found my supposed parasites so densely packed in its semen, that I began to doubt whether I had not before me an essential constituent of the semen. And then I was at once struck with the similarity between the agitated hairs of the tail and seminal filaments which have nearly attained maturity, but have not yet separated from the place of their formation; and I soon succeeded in breaking up several tails into groups of unmistakable seminal filaments, perfectly resembling those which were swimming about freely in the seminal fluid.

That these structures are an essential constituent of the semen was consequently established. But are they the formative organs of the seminal filaments, from which these subsequently, when mature, separate? or are they "spermatophora," around which the mature seminal filaments have collected? The former notion appears to me the more probable one; it is supported especially by specimens frequently observed, in which the seminal filaments were not only motionless, but also appeared to be shorter than in the others. Besides these, numerous other still younger forms were seen: the youngest that came under observation was of the form of an elongated egg, about 0.2 millim. in length and 0.1 millim. in breadth. The greater part of this oval body appeared perfectly transparent and empty; the thickened end alone was occupied by a roundish mass, which was rendered opaque by densely imbedded granules. It appeared darker on the side turned towards the apex of the egg, and lighter on the opposite side, although no distinct line of demarcation could be detected

between the dark and light portions. Such a line of demarcation makes its appearance when the body has grown to about 0·3 millim. in length; the paler and darker portions then appear very like a small acorn in its cup. Subsequently the pale portion becomes elongated, and grows into the caudal part of our structure; whilst the darker head portion gradually acquires a conical form, and the foremost membranous part commences its motory activity; but the tail, contrary to what occurs at a later period, is still distinguished from the head by its much lighter appearance, and, instead of seminal filaments, its surface is covered with small, roundish, transparent granules (vesicles?), thus reminding one of the globular or elongated bodies on which the seminal filaments are developed, for example, in the body-cavity of the Annelida.

XLIX.—Descriptions of new Genera and Species of Phytophaga.

By J. S. BALLY.

Fam. Sagridæ.

Sagra mutabilis.

S. supra subopaca, subtus nitida; antennis extrorsum nigro-purpureis; thorace subquadrato, antice vix producto, angulis anticis modice prominulis; clytris basi thorace multo latioribus, humeris subprominulis, a basi ad apicem angustatis, supra convexis, intra humeros sat profunde impressis, subtiliter coriaceis, infra basin minus profunde transversim impressis, tenuissime gemellato-punctato-striatis, striis fere omnino deletis.

A. Corpus rufo-ignecum.

C. Corpus viridi-cæruleum.

B. Corpus viridi-aureum.

D. Corpus purpureum.

Mas. Femoribus posticis sat elongato-incrassatis, elytra sat superantibus, subtus bidentatis, dente antico majore; tibiis ejusdem paris apice mucronatis bidentatisque, dente exteriori valido, abdominis segmento primo deplanato, crebre punctato, tomentosum.

Fem. Elytris oblongis, postice minus angustatis; femoribus posticis elytra vix superantibus, subtus ante apicem crista brevi instructis; tibiis ejusdem paris apice breviter mucronatis.

Long. 8–11 lin.

Hab. Cambodia, Siam.

This lovely species is most closely allied to *S. speciosa*, Lac.: it agrees so completely in nearly all its characters with that insect that a detailed description would be almost useless. I shall therefore confine myself to the points of difference between the two insects.

In *S. mutabilis* ♂ the antennæ are equally long, but stouter; the thorax is usually (but not always) slightly broader; the elytra are much broader at their base, the humeral callus being